



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



259433

REPLY TO THE ATTENTION OF

MEMORANDUM

DATE: MAY 18 2006

SUBJECT: ENFORCEMENT ACTION MEMORANDUM – Determination of Threat to Public Health, Welfare or the Environment at the St. Louis Smelting and Refining Company Site (Pine Lake Sediments), Collinsville, St. Clair County, Illinois (Site ID # B54N)

FROM: Kevin R. Turner, On-Scene Coordinator
Emergency Response Section 2

Sam Barnes for KT

TO: Richard Karl, Director
Superfund Division

THRU: Linda Nachowicz, Chief
Emergency Response Branch 2,
Superfund Division

Linda Nachowicz

I. PURPOSE

The purpose of this memorandum is to document the determination of an imminent and substantial threat to the public health and the environment posed by the presence of hazardous waste and hazardous substances located at the former St. Louis Smelting and Refining Company Site (St. Louis Smelting) , Collinsville, Illinois (Latitude - 38°41'28" North and Longitude - 89°57'35" West) . The former St. Louis Smelting Site operated as a primary lead smelter and lead refining facility, but now is occupied with residential homes and two surface water bodies.

The response action proposed herein will mitigate Site conditions by removal and off-site disposal of the contaminated sediments. The high levels of lead in Pine Lake sediments at concentrations considered hazardous and the Site's proximity to residential properties requires that this action be classified as a time-critical removal. The Pine Lake sediment removal project is phase two (of two) involving the clean-up of the waste from the former St. Louis Smelter and Refining Company. Phase one occurred in 2004 and 2005 and consisted of the removal and off-site disposal of elevated levels of lead from approximately 160 residential properties.

There are no nationally significant or precedent setting issues associated with the former St. Louis Smelting and Refining Company Site. The former St, Louis Smelting and Refining Company Site is not on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID# ILD980607006

A. Site Description

1. Site history

The St. Louis Smelting and Refining Company operated a lead smelting facility in Madison County, Illinois from 1904 until November 1933. At peak production, the facility employed 425 men. At the time of operation, the facility was located northeast of Collinsville, Illinois. Since that time, Collinsville has expanded to the area surrounding the facility and as indicated by historical aerial photographs, in the 1950s and 1960s residential homes began to be built on the property. The plant closed in November 1933, following a strike for higher wages and shorter hours. Following plant closure, equipment from the facility was shipped to South America. The actual date when the facility was dismantled is unknown, however, aerial photographs from 1941 indicate that only two buildings remained intact. The aerial photographs show primarily foundations, rubble, a general lack of vegetation and a large slag pile at the end of where Pine Lake Road is now located.

Pine Lake was used by the smelting operation for cooling water, make-up water and as a holding area for site run-off. The only photograph in the site file shows the smelter buildings on high ground east of Pine Lake and a run-off stream coming from the operation and entering the lake. The highest concentrations of lead are where this run-off stream enters Pine Lake.

A plat map of Madison County from 1917 indicated that at one time, St. Louis Smelting owned up to 482 acres, however, it is generally believed that refining activities occurred on approximately 40 acres. Residential development in the area directly north and south of Pine Lake began in the 1950's as evidenced by historical aerial photographs. Residential development to the east of Pine Lake in what is now called Collinswood subdivision began in the mid-to-late 1970s. There are three water fingers which characterize the lake features. Because of sedimentation the three fingers are extremely shallow. Between the western and central water fingers there is a peninsula with a sand beach area for swimming.

2. Physical location

The site is located east of Route 159 with Pine Lake Road as the central feature. Property use within site boundaries are single family residential. Residential property lot sizes are approximately one acre with a few exceptions. All the homes surrounding Pine Lake are part of the Pine Lake Homeowners Association with each property having an equal voting share in Association business. Homes in the area range from approximately 30 to 90 years old. Homes in the area receive potable water through a public water supply system. Topography around Pine Lake includes low rolling hills to relatively flat.

Surface water runoff from residential properties adjacent to Pine Lake is channeled into the lake. The south shore of Pine Lake is dammed and bounded by Pine Lake Road. The dam has a culvert that allows water in Pine Lake to drain under the road during high-water periods. After flowing under Pine Lake Road, drainage from Pine Lake flows south-southwest into the lakes in

Woodland Park. Residents of the Pine Lake Subdivision surrounding Pine Lake own the water body and small portions of adjacent shoreline property. Pine Lake is used for recreational fishing throughout the year and swimming during warmer months.

According to the Region 5 Superfund Environmental Justice Analysis, the group of residents closest to the Site reside in census tract #4035.02, block group #3. This block group has a total population of 2,501. Of the 2,501, 91.7% are classified as non-minority. Approximately 89% of the families residing in this block group have an income of greater than the established State low income level. The demographic conditions indicate that this is not an environmental justice area.

3. Removal Site Evaluation

This site was first sampled by Illinois EPA in 1985. Since that time several investigations have occurred with the most recent in 2002 and 2003. Below is an abbreviated version of the Illinois EPA data. The complete Illinois EPA data can be found in the Administrative Record.

2001 Sampling Data

In November of 2001, a homeowner from the Pine Lake subdivision obtained three sediment samples from Pine Lake. The samples were obtained because at the time, the Pine Lake Homeowners Association were considering dredging the lake because it had silted in and the three northern fingers of the Lake had become more shallow than desired. A single sediment sample was taken from each of the three fingers of the lake. The homeowner identified the samples as Area 1, Area 2, and Area 3 with Area 1 representing the northwest finger of the lake, Area 2 representing the north-central finger, and Area 3 representing the northeast finger of the lake. The three sediment samples were analyzed for total metals and Resource Conservation and Recovery Act (RCRA) TCLP metals. In addition, the Area 1 sample was analyzed for semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs).

The analysis results from Pine Lake sediments collected by the homeowner in 2001 are summarized in the table below.

Sample Location	Total Lead mg/kg	TCLP Lead mg/L	Total Arsenic mg/kg
Area 1	2310	26.9	17.5
Area 2	2680	31.9	6.89
Area 3	6220	12.7	7.35

The sample results indicate that TCLP lead concentrations in the sediment are above the regulatory standard of 5.0 mg/L meaning that if the sediments were disposed of off-site, at least a portion of the material would be regulated as RCRA hazardous waste for lead. Organic analysis results for both VOCs and SVOCs on the Area 1 sample resulted in levels below detection for all compounds analyzed. The lab noted that the temperature of the sample was out of the acceptable range.

2002 and 2003 Sampling Data

In March 2002 additional field-based site characterization for on-site sediments using a Niton X-Ray Fluorescence (XRF) multi-element analyzer were performed. In addition, due to the high levels of lead encountered during previous assessment, several samples were sent to a laboratory for analysis.

Sediment sampling activities were conducted in Pine Lake, the lake in Woodland Park, the drainage way between the two lakes, and the small pond due north of Pine Lake.

Lead concentrations in sediments from Pine Lake ranged from below detection limits to 86,374 ppm. Lead concentrations in sediments from the lake in Woodland Park ranged from 40.3 ppm to 357.4 ppm. Concentrations of lead in sediments from the drainage way in between Pine Lake and the lake in Woodland Park ranged between below the limit of detection to 419.2 ppm. Concentrations of lead in sediments from the pond just north of Pine Lake ranged between 35.5 ppm to 82 ppm.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the St. Louis Smelting and Refining Site (Pine Lake Sediments) present an imminent and substantial threat to the public health, or welfare, and the environment and meet the criteria for a removal action provided for in the National Contingency Plan (NCP), Section 300.415, Paragraph (b)(2). 40 C.F.R. § 300.415(b)(2)(I), (iii) and (v), respectively, specifically allows removal actions for:

- 1) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The Pine Lake is located on the former St. Louis Smelting and Refining Company property. Illinois EPA has documented the presence of lead in sediments above health standards. The health concerns at this Site are related to the fact that residents live around and use Pine Lake, potentially exposing young children, pregnant women and elderly individuals to contamination.

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen. Toxicity information is summarized in the references, ATSDR, 1993 and U.S. EPA, 2000.

The highest concentration of lead was over 86,000 ppm within the lake sediments. In addition, the Illinois Department of Public Health recommends that remediation efforts be initiated on the basis of the high levels of lead found in the sediment soils and based upon the likelihood of sensitive populations (i.e. children) being exposed to lead. Since the neurological effects on young children and the developing are considered to be irreversible, even short term exposures to

elevated lead levels are of a public health concern.

References:

ATSDR. 1993. Toxicological Profile for Lead. Agency for Toxic Substances and Disease Registry, Division of Toxicology. Atlanta, GA. U.S. Department of Health and Human Services, Public Health Service.

U.S. EPA. 2000. Integrated Risk Information System (IRIS). Database information located at <http://www.epa.gov/iris/subst/index.htm>; U.S. Environmental Protection Agency.

- 2) Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release;

The elevated concentrations of lead (over 86,000 ppm) in the sediments at or near the surface pose a threat of further migration of contaminated materials due to the shallow areas where the higher levels of lead are found. During periods of low water, when the shallow areas dry out, there is also the possibility of airborne migration of lead attached to dust particles. People and animals contacting contaminated areas could track lead to other areas on-site, off-site or into their homes. Children are likely to come in contact with contaminated sediments when playing in the shallow areas and are likely to track the contamination to other areas.

Illinois EPA documented elevated lead levels in the sediments of Pine Lake. These levels ranged from over 86,000 ppm at zero to six inches to above 5,000 ppm at 30 inches.

- 3) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

Some of the highest concentrations were found in the shallows of the lake where during dry conditions these sediments are exposed to the general population and are subject to migration. Winds could cause dust particles containing lead and other contaminants to migrate into the surrounding community. These weather conditions could result in a continued release of the contaminants of concern described herein to the surrounding residential neighborhood.

- 4) The availability of other appropriate federal or state response mechanisms to respond to the release.

In a letter dated April 22, 2002, Illinois EPA requested U.S. EPA, Region V assistance with the St. Louis Smelting and Refining Site. The City of Collinsville and an Illinois State Senator has also indicated their desire to see this site cleanup completed. The Pine Lake Homeowners Association were considering dredging the lake because it had silted in and the three northern fingers of the Lake had become more shallow than desired. Neither the State of Illinois nor the City of Collinsville has the funds to undertake removal of the hazardous wastes found at this site.

IV. ENDANGERMENT DETERMINATION

Given the conditions at the St. Louis Smelting and Refining Site (Pine Lake Sediments), the nature of the hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if

not addressed by implementing the response actions selected in this Action Memorandum, present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS

A. Proposed Actions

The purpose of this removal action is to mitigate the imminent and substantial threats posed to public health or welfare or the environment from wastes at the site. The proposed immediate response action to be implemented by NL Industries, Inc. includes the following actions:

- 1) Develop and implement a Site Health and Safety Plan, including an air monitoring plan and Site contingency plan; and
- 2) Develop and implement a Site security plan; and
- 3) Confirm and characterize the extent of lead contaminated sediments from and adjacent to Pine Lake; and
- 4) If necessary, implement measures to divert the flow into Pine Lake or drain the lake in the work areas (i.e. construction of a dam just upstream of work areas, pumping water around the work area, discharging in downstream areas) in order to maximize sediment removal efficiency; and
- 5) Characterize, remove and properly dispose of hazardous substance and wastes (contaminated sediments) located in and adjacent to Pine Lake in accordance with U.S. EPA's Off-Site Rule (40 CFR 300.440).
- 6) If necessary, replace and reimburse personal effects, trees and shrubs, and residential structure components (including sidewalks, driveways, landscaping rock, etc) and public right-a-ways (including roads) destroyed, damaged or disposed of during removal activities;

The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.41 5(I) of the NCP. The nature of this removal action, as well as the removal of lead contaminated sediments, will eliminate the need for any post removal Site control.

The response actions described in this memorandum directly address the actual or threatened release at the Site of a hazardous substance, or of a pollutant, or of a contaminant which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

B. Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) will be complied with to the

extent practicable. On May 26, 2004, a letter was sent to Bruce Everetts of the Illinois EPA requesting that the Illinois EPA identify State ARARs. Any State or federal ARARs identified in a timely manner for this removal action will be complied with to the extent practicable.

C. Project Schedule

This removal action is expected to take place and be completed within one construction season. It is anticipated that this clean-up project will begin in early summer 2006 and be completed by early fall 2006.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health and the environment will result if no action or delayed action ensues.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in an Enforcement Confidential Addendum (see Attachment A).

IX. RECOMMENDATION

This decision document represents the selected removal action for the St. Louis Smelting and Refining Site (Pine Lake Sediments), Madison County, Collinsville, Illinois, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site (see Attachment B). Conditions at the Site meet the criteria of the NCP, 40 C.F.R. § 300.415 (b)(2) for a removal action, and I recommend your approval of the proposed removal action. You may indicate your decision by signing below:

APPROVE: Richard Karl DATE: 5-18-06
Richard Karl, Director Superfund Division

DISAPPROVE: _____ DATE: _____
Richard Karl, Director Superfund Division

Attachments:

- A. Enforcement Confidential Addendum
- B. Administrative Record Index
- C. Site Area Map

cc: D. Chung, U.S. EPA HQ, 5202G
M. Chezik, U.S. Department of Interior, **w/o Enf. Addendum**
B. Everetts, IL EPA, **w/o Enf. Addendum**
D. Scott, IL EPA, **w/o Enf. Addendum**
S. Davis, IL DNR, **w/o Enf. Addendum**

BCC PAGE

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

(REDACTED 1 PAGE)

ATTACHMENT A

ENFORCEMENT ADDENDUM

**ST. LOUIS SMELTING AND REFINING SITE
COLLINSVILLE, MADISON COUNTY, ILLINOIS**

(REDACTED 1 PAGE)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**



ATTACHMENT B

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR ST. LOUIS SMELTING AND REFINING SITE COLLINSVILLE, MADISON COUNTY, ILLINOIS

ORIGINAL
NOVEMBER 2, 2004

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	00/00/00	U.S. EPA	File	Site Location Map for the St. Louis Smelting and Refining Company Site	1
2	06/08/81	Baser, F. NL Industries,	U.S. EPA	Letter re: NL Industries' Completion of Hazardous Waste Site Forms w/Attachment	3
3	06/28/02	Illinois EPA	U.S. EPA	Reassessment Report for the St. Louis Smelting and Refining Company	73
4	09/19/03	Illinois EPA	U.S. EPA	Expanded Site Inspection Report for the St. Louis Smelting and Refining Site	88
5	07/22/04	U.S. EPA	Respondents	Administrative Order on Consent for Removal Action at the St. Louis Smelting and Refining Site w/Attachments	401

UPDATE #1
NOVEMBER 12, 2004

1	12/04/04	Turner, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for a Time Critical Removal Action at the St. Louis Smelting and Refining Company Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	13
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ST. LOUIS SMELTING AND REFINING SITE
ADMINISTRATIVE RECORD
PAGE 2

UPDATE #2
MAY 9, 2006

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	00/00/00	Turner, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for a Time Critical Removal Action at the St. Louis Smelting and Refining Company Site (PENDING)	